F·A·A·M facility for airborne atmospheric measurements

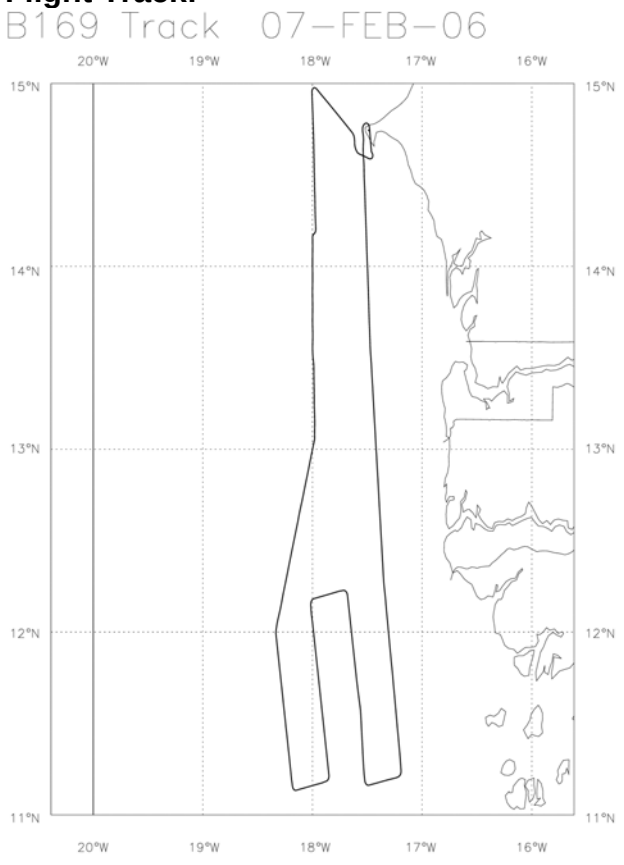
FLIGHT FOLDER

Flight No.:	B169
Date:	7 Feb 2006
Take Off	11:22:28
Landing:	14:18:34
Flight Time	2h56m06

Campaign: DODO
Trials Instructions: Shakedown/ Biomass/Aerosol sampling
Operating Area: South of Dakar, over ocean

POB	Position	Name	Institute
1	Captain	Alan Foster	Directflight
2	Co-pilot	Graham Morgan	BAES
3	CCM	Jackie Mulholland	Directflight
4	Mission Scientist	Ellie Highwood	Reading University
5	Flight Manager	Alan Woolley	FAAM
6	VACC	Jim McQuaid	University of Leeds
7	CCN / CVI / CCM2	Paul James	FAAM
8	Cloud Physics	Martyn Pickering	Met Office
9	Filters	Paola Formenti	University of Paris 12 (LISA)
10	AMS 2	Gerard Capes	University of Manchester
11	Wet Neph	Simon Osborne	Met Office
12	Core Chemistry	Ruth Purvis	FAAM
13	SWS/Filters Training	Claire McConnell	Reading University
14	Mission Scientist Training	Ben Johnson	Met Office
15	SWS/SHIMS	Ian Rule	Met Office
16	Mission Scientist	Jim Haywood	Met Office
17	Wet Neph Training	James Bowles	Met Office
18	ARIES	Alan Vance	Met Office

Flight Track:

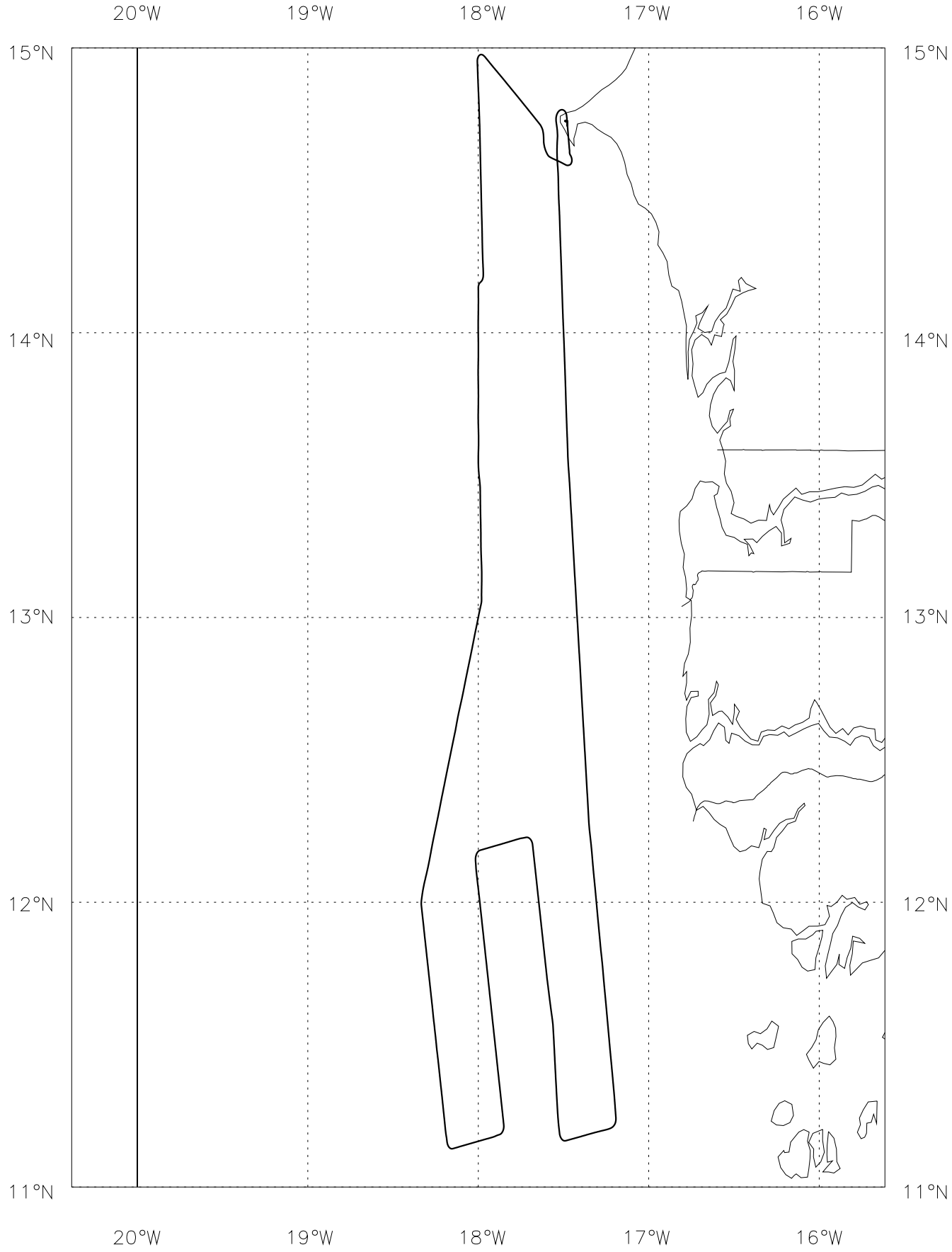


FLIGHT SUMMARY

Flight No b169
Date: 7 Feb 2006
Project: DODO
Location: Offshore south of Dakar

Start Time	End Time	Event	Height (s)	Hdg	Comments
105558		Bee removal starts	0.11 kft	334	
110531		engines start	0.11 kft	334	
110622		inu to nav	0.11 kft	334	
110846		power transfer	0.11 kft	334	
111107		taxy	0.11 kft	334	
111948		asp open	0.12 kft	171	
112228		T/O	0.10 kft	353	from dakar
112228	113959	Profile 1	0.10 kft	353	
114104	115140	Profile 2	18.0 - 8.1 kft	176	
115140		Run 1.1	8.1 kft	176	
120146		Run 1.1	8.0 kft	170	Limel checked
120958		Run 1.1	8.0 kft	170	bbr shtr open 12:06
121632		Run 1.1	8.0 kft	171	end time
122216	123736	Run 1.2	8.1 - 8.0 kft	350	
124311	125702	Run 1.3	8.0 kft	175	
130245	130710	Profile 3	8.1 - 4.1 kft	350	
130711	131532	Profile 4	4.1 - 12.0 kft	351	
131602	132511	Profile 5	12.0 - 4.1 kft	013	
132511	133150	Profile 6	4.1 - 11.9 kft	019	
133255	134420	Profile 7	12.0 - 1.9 kft	000	
134420	135004	Run 2.1	2.0 kft	001	
135337	140319	Run 2.2	2.0 kft	001	
141834		Land	0.17 kft	354	at Dakar
142327		asp closed	0.19 kft	332	
142509		standstill	0.19 kft	332	14'44.56N, 17'29.30W

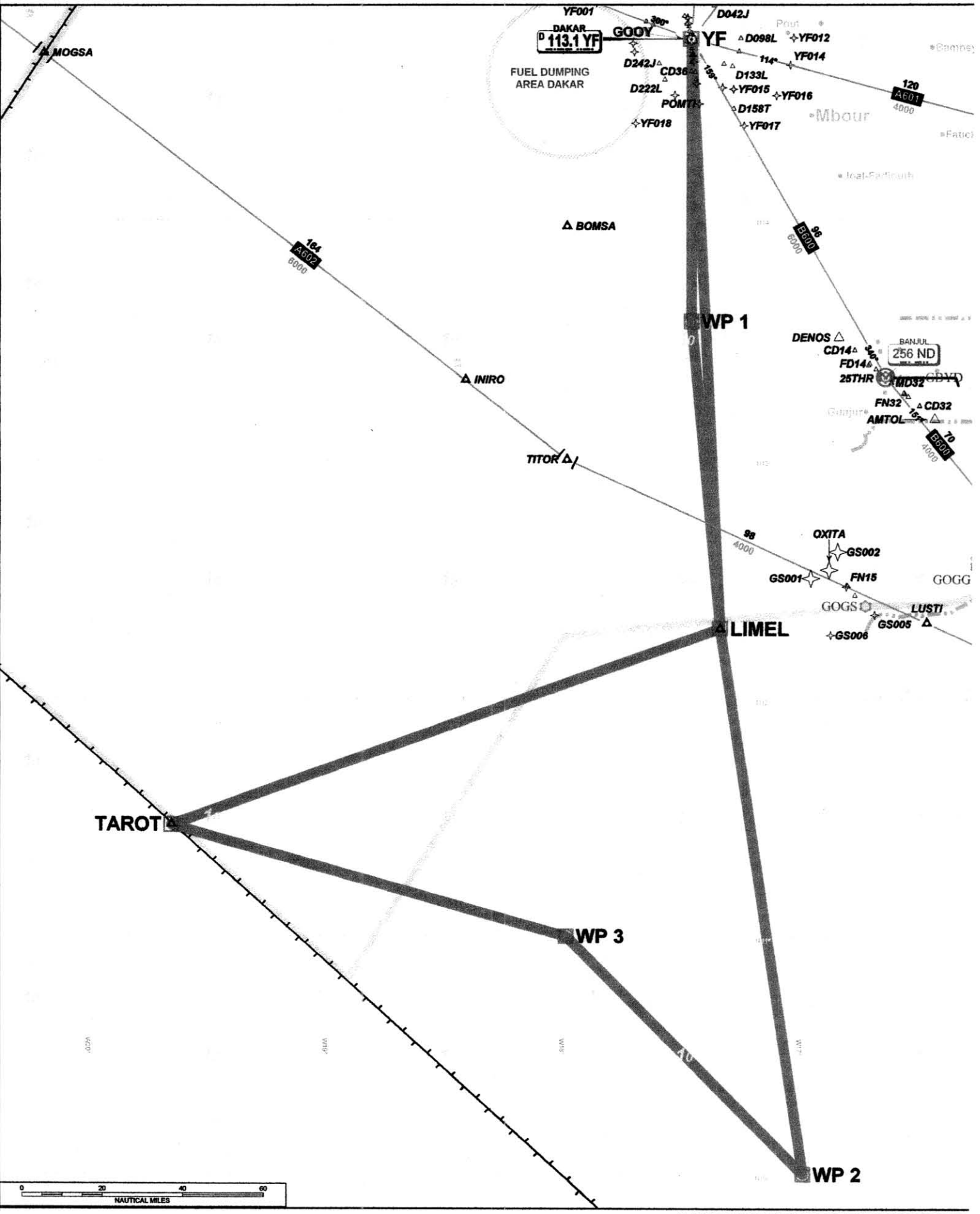
B169 Track 07-FEB-06



GOOY -> GBYD - Overview

NavData Cycle 2006-1 Expires: Thursday, 16 February 2006.
Scale: 1:2214196 (1 inch = 30.37 naut mi). Printed on 06 Feb 2006

JEPPESEN
FliteStar 9.150



FAAM Sortie Brief

DODO Flight: In situ sampling of biomass and dust aerosol, cloud processing of aerosol

Flight No: B170 Date: 11th February 2006

Trial objectives:
In situ sampling of aged biomass, potentially after cloud processing. Model validation of dust plume.

Location:
Over ocean to south of Dakar, in region west of airway UG853 and in region defined by Limel, A, (Meeting of Roberts, Dakar Gooo and Dakar Oceanic), Tarot and Titor.

Weather:
Clear skies preferred.

Special requirements:
Low-level (50ft) flying over ocean. Open air sample pipes in taxi before take-off.

Flight pattern:

1. Take off from Dakar.
2. Profile ascent to FL150 at 1000ft/min towards Limel, south of Dakar [20 mins, T= 20 mins]
3. Profile descent to within the aerosol layer at 1000ft/min [10 mins, T=30mins]
4. Perform a SLR within the aerosol layer to point Limel [10mins, T=40mins]
5. Starting from Limel, perform a profile ascent to FL180 towards point B. [15 mins, T=45mins]
6. At point B drop sonde [5mins, T=50mins]
7. Perform a procedural turn in the region of point B and descend to first aerosol level to be defined by aircraft scientist. [5 mins, T=55 mins]
8. Perform a 15 minute SLR within the aerosol towards point C. [15 mins, T= 70 mins]
9. Turn 90 deg clockwise and perform a 5 min SLR [5 mins, T=75 mins]
10. Turn 90 deg clockwise and perform a 15 min SLR [15 mins, T=90 mins]
11. Turn and perform a 5 min SLR due west [5 mins, T=90 mins]
12. Turn and perform a 15 min SLR due north [15 mins, T=105 mins]
13. Turn towards Dakar.
14. Profile descent to low level (below FL040, to be advised by aircraft scientist). [5 mins, T=110 mins]
15. Perform an SLR at low level towards Dakar [40 mins, T=150 mins]
16. Land Dakar.

Sortie Debrief

Flight Number: B169 Date: 7th February 2006

Sortie Objectives: Shake-down flight and in-situ sampling of aged biomass aerosol.

Operating area: Over ocean areas south of Dakar, off the Guinea coast. Immediately south and west of the point Limel.

Weather: Extensive cirrus in region of Dakar (7/8 at take-off), and some mid-level cloud. Haze to south (biomass?). Local pollution near Dakar. Clearer skies towards southern most points of track.

Flight Patterns:
After take-off from Dakar, a profile climb to FL180 revealed some low level dust or local pollution within the first 200ft, an elevated pollution layer between around FL075 and FL110 and a further thin elevated layer FL120 to FL160. Free tropospheric air was encountered above FL160.
A profile descent was carried out to FL080, within the biomass layer. A SLR at FL080 due south to Limel revealed some biomass aerosol with scattering 100 x 10^{-6} m^{-1}. Different size distribution to previous flights from Niamey. Hypothesise purer aged biomass with no dust mixed in. At Limel a raster pattern consisting of 15 min SLRs at FL080, followed by a relocation 5 minutes west at the same level was performed. High concentrations of biomass continued to be seen south of Limel, but with a change in size distribution to look more like previous Niamey based flights. Ci clearing to south. 3 legs of the raster pattern were performed, oriented North-South. Some aerosol was visible at low level beneath the flight towards the southern end of the run. At the southern end of the last leg, and after the relocation 5 mins west, a long northerly track was performed back towards Dakar. A sawtooth profile was performed twice between FL040 and FL120. The aerosol layer was certainly above 4000ft, but continued above FL120. The low layers cleared as going further north. A descent to 2000ft on a track towards Dakar was followed by an SLR at 2000ft for 15 minutes heading North to shortly north of Dakar. This could be a good clean base-line for filters. A number of ships were seen, and an attempt at a NEON manouver was made. Towards the very end of the SLR, scattering increased in a local pollution plume visible to the eye from Dakar. At the end of the SLR an ascent was made to FL050 for recovery to Dakar.

Summary:
An effective shakedown flight. In situ sampling of aged biomass plumes to the south.

Problems
ARIES problematic, software conflict? No function for most of flight.
SHIMS both modules dropping in and out but stable for last 90 minutes of flight.
AMS suffered interference from CCN operator part way through flight.

Ellie Highwood

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FL080 scattering drops off.

Mission Scientist's Log

Flight No **B169** Date 7/2/06 Page 1 of 3

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
1040					Dakar 3/8 Ci, 4/8 mid level cloud
					gradually clouding over all morning Haze to south. Bea clearance.
					Taxi- air sample pipes open at
					end of runway. SHIMS unable to initialise
112228	T/O				Elevated pollution layer, +
112228	P1 ↑				low level layer with intervening
					clear slot. Cirrus and mid level
					cloud seaboarding 25° Coastside
					Dewpoint 0.9°C
					Elevated haze layer ~ 8000ft
1					2 biomass layers 7½→11kftand
					12½→16. FT above FL160
113959	P1 end	FL180			End profile. Above cloud.
114104	P2 ↓	FL180			5/8 Ci above. Clear haze below.
					$\sigma_{sca} \sim 80\times10^{-6}\ m^{-1}$
					SMS modules 1 & 2 ups. SHIMS
115140	P2/R1 start	FL080			End of profile. Cirrus above 7/8
					AMS high loads of organics
115735					σ_{sca} 100 m^{-1} x 10^{-6}, ARIES
					intermittent.
					Ci clearing ahead. Suggest pure
					biomass
120338		FL080 Level			Scattering dropping off & becoming
120832	R1.1				more like previous flights. Ci ↓ 4 ships below. Commercial
121632	R1.1	FL080			End run- reposition west.

1122
Q Dust @ low level even to south so model

Mission Scientist's Log

Flight No **B.169** Date 7/2/06 Page 2 of 3

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
					Ci to west repositioning for
					next run.
					Spectrum shifted to ~~too~~ smaller particles?
					Siz dist^{n} different
122216	R1.2	FL080			Ci ↑ to North
					ARIES is down.
123736	R1.2	FL080			
124311	R1.3	FL080			SHIMs / SWS in & out ARIES no
125702	R1.3	FL080			end run
					Possibly dust below @ low level
					visibility down - turn west
					Still extensive Ci above. 11N 18W
130245	P3	FL080↓			Visibility reduced
130710	P3 end P4 start	FL040↑			Peak @ 500ft., out bottoming 4kft.
					~~Cloud base~~
	P4 end				Dust (or something) @ low level
131602	P5↓	FL120			Start profile.
					5700 ft low level
132511	P5/P6	FL040			End/start profile
					clear slot ~ 10,000ft,
					clearer below
					Radiation problems.
133115	P6 end	FL120			Aerosol above & below
133255	P7	FL120↓			heading to low level
					clear slot @ FL010 visual

Sawtooth

Saw

Descend

New flight
Low level work to South? if dust model/MODIS suggests Low level run to south – dust underneath.

Radiometers fixes
– down day tomorrow.
14

Mission Scientist's Log

Flight No **B**169 Date 7/2/06 Page 3 of .....

Tim
– need to leave NEON calcs ok for Bernie
– SZA calcs

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
					elevated layer above FL120
					which we didn't sample
					looks clean
					sea calm, no wind
					Baseline filters good sample?
134420	P7end R2.1	2000ft			end/profile, start run, clear below
		interrupt run for NEON			Possible ship exhaust sample?
135337	R2.2	2000ft			Dakar pollution towards end of
					run.
140319	R2.2end	2000ft↑			Cloudy. Haze over Dakar itself.
					Recover to Dakar
					Dust? to north?
141800					Land

CLOUD PHYSICS LOG Flight B169

Date: 7/2/2006	Operator: MAP	DRS Time: 09:00:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 1 of 3

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
11:22:28																	Start Profile 1 from Take off
11:26:30	250	0.10	Off														FL040
11:27:11	250	0.10	Off	Fail	1												FL050
11:28:16	230	0.10	Off	Fail	1												FL060
11:29:06	990	0.09	Off	Fail	1												FL070
11:29:49	1000	0.09	Off	5	1												FL080
11:30:46	800	0.10	Off	5	1												FL090
11:31:58	490	0.10	Off	5	1												FL100
11:32:54	400	0.10	Off	10	2												FL110
11:33:51	270	0.10	Off	5	1												FL120
11:34:56	420	0.10	Off	10	1												FL130
11:35:57	620	0.10	Off	5	1												FL140
11:36:59	80	0.10	Off	2	1												FL150
11:37:55	10	0.15	Off														FL160
11:38:45	10	0.15	Off														FL170
11:39:54	8	0.12	Off														End of Profile 1 @ FL180
11:41:02	7	0.13	Off														Start Profile 2 from FL180
11:42:05	10	0.15	0														FL170
11:43:05	20	0.12															FL160
11:44:08	40	0.12		2													FL150
11:45:06	560	0.11		10	1												FL140
11:46:16	820	0.11		10	2												FL130
11:47:25	500	0.11		10	1												FL120
11:48:33	500	0.11		10	2												FL110
11:49:30	660	0.10		10	1												FL100
11:50:33	1250	0.10		10	2												FL090
11:51:41	1450	0.10		10	2												End of Profile 2 & Start Run 1.1 @ FL080
11:52:00	1300	0.10		10	3												
11:54:00	1500	0.10		10	5												
11:56:00	1400	0.10		10	3												
11:58:00	1500	0.10		10	8												
12:00:00	1150	0.10		10	3												
12:02:00	900	0.10		10	3												
12:04:00	840	0.09	Off	10	2												
12:06:00	880	0.09	Off	10	2												
12:08:00	900	0.09	Off	10	6												
12:10:00	1100	0.09	Off	10	5												
12:12:00	1000	0.09	Off	10	3												
12:14:00	1300	0.09	Off	10	3												
12:16:33																	End of Run 1.1
12:22:18																	Start Run 1.2 @ FL080
12:23:00	930	0.09	Off	10	7												
12:25:00	890	0.09	Off	10	4												
12:27:00	1100	0.09	Off	10	3												
12:29:00	990	0.09	Off	10	3												
12:31:00	1200	0.09	Off	10	2												

CLOUD PHYSICS LOG Flight B169

Date: 7/2/2006	Operator: MAP	DRS Time: 09:00:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 2 of 3

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
12:33:00	900	0.09	Off	10	3												
12:35:00	1100	0.10	Off	10	3												
12:37:00	880	0.10	Off	5	5												
12:37:37																	End of Run 1.2
12:43:11																	Start Run 1.3 @ FL080
12:44:00	980	0.10	Off	5	3												
12:46:00	850	0.10	Off	5	2												
12:48:00	870	0.09	Off	5	3												
12:50:00	1100	0.09	Off	5	3												
12:52:00	720	0.09	Off	5	1												
12:54:00	1000	0.09	Off	5	1												
12:56:00	910	0.09	Off	5	3												
12:57:00																	End of Run 1.3
13:02:45	880	0.09	Off	5	1												Start Profile 3 from FL080
13:04:12	1500	0.09	Off	5	1												FL070
13:05:04	1270	0.09	Off	5	2												FL060
13:06:11	4000	0.09	Off	5	1												FL050
13:07:07	2000	0.09	Off	10	2												End of Profile 3 & Start Profile 4 @ FL040
13:08:18	2700	0.09	Off	10	3												FL050
13:09:22	945	0.09	Off	10	2												FL060
13:10:16	950	0.09	Off	10	3												FL070
13:11:22	1060	0.10	Off	10	3												FL080
13:12:27	940	0.10	Off	10	1												FL090
13:13:32	740	0.09	Off	5	1												FL100
13:14:34	450	0.10	Off	10	1												FL110
13:15:30	600	0.10	Off	10	1												End of Profile 4 @ FL120
13:16:02																	Start Profile 5 from FL120
13:17:15	600	0.09	Off	10	2												FL110
13:18:24	950	0.09	Off	10	1												FL100
13:19:31	330	0.10	Off	5	1												FL090
13:20:37	1300	0.10	Off	10	1												FL080
13:21:46	1670	0.10	Off	10	1												FL070
13:23:00	1870	0.09	Off	10	2												FL060
13:24:10	630	0.09	Off	10	2												FL050
13:25:11	180	0.10	Off	10	2												End of Profile 4 & Start Profile 5 @ FL040
13:26:19	860	0.08	Off	10	3												FL050
13:27:04	1900	0.09	Off	10	2												FL060
13:27:50	1500	0.09	Off	10	1												FL070
13:28:40	1000	0.09	Off	10	2												FL080
13:29:34	880	0.10	Off	10	1												FL090
13:30:19	320	0.10	Off	10	1												FL100
13:31:16	345	0.10	Off	10	2												FL110
13:31:50	730	0.10	Off	10	3												End of Profile 5 @ FL120
13:32:58	500	0.10	Off	10	2												Start Profile 6 from FL120
13:34:04	670	0.10	Off	10	2												FL110
13:35:15	650	0.10	Off	10	2												FL100

CLOUD PHYSICS LOG Flight B169

Date: 7/2/2006	Operator: MAP	DRS Time: 09:00:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 3 of 3

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
13:36:32	1280	0.10	Off	10	1												FL090
13:37:42	1300	0.09	Off	10	1												FL080
13:38:51	2100	0.09	Off	5	1												FL070
13:39:56	690	0.09	Off	5	2												FL060
13:40:58	280	0.09	Off	3	1												FL050
13:41:59	270	0.10	Off	3	1												FL040
13:42:03	140	0.10	Off	5	1												FL030
13:44:24																	End of Profile 6 & Start Run 2.1 @ 2000’
13:45:00																	
13:46:00	120	0.10	Off	5													
13:48:00	80	0.10	Off	5	5												
13:50:10																	End of Run 2.1
13:53:37																	Start Run 2.2 @ 2000’
13:54:00	100	0.10	Off	5	1												
13:56:00	130	0.10	Off	5	1												
13:58:00	150	0.10	Off	5	1												
14:00:00	210	0.10	Off	5	1												
14:02:00	280	0.10	Off	5	1												
14:03:20																	End of Run 2.2
	PCASP Flowrate = 1.8 CC/Sec FFSSP switched off when over heating SID1 Synch errors at start – PC rebooted																

CLOUD PHYSICS PROCESSING LOG

Flight number: B169
Date:

B) FFSSP PROCESSING		
Processing Stage	Completed	Comments
1) Transfer *.txt files from DVD to PC	X	
Bnnn_FFSSP_hh.txt for each hour of data	X	
Bnnn_FFSSP_HVMS.txt	X	
2) FTP the files (ascii) from the PC to the directory	X	
PMSDATA: on FLOODS	X	
3) RUN MRFB:[PMS.FAST_FSSP]FSSP_EXTRACT_TAS	X	
a) Flight number: Bnnn	X	
b) Path name: MFDDATA:Bnnn_MFDX	X	
c) Output directory: PMSDATA:	X	
d) Start time: 0 if unknown	X	
e) End time: 240000 if unknown	X	
4) RUN MRFB:[PMS.FAST_FSSP]FFSSP_PROCESS_TXT	X	Note the calibration file used
a) Flight number: Bnnn	X	
b) Directory: PMSDATA:	X	
c) TAS in processing: Y	X	
d) Vel threshold (clicks) 0	X	
e) Calibration file: Use the most recent calibration file.	X	
Format FFSSP_CALddmmyyyy.txt	X	Zero glitches
Calibration files to be stored in MRFB:[PMS.FAST_FSSP]	X	CAL27022006.TXT
f) Adjust FFSSP time Y/N	N	Yes only if gross errors occur in FFSSP time eg; ~ 1hour
g) If Y, enter value to add to data time (seconds)	-	
5) In PVWAVE		
a) enter:		
!path=!path+',mrfb:[pms.proc]'	X	
Note that the comma before "mrfb" is important!		
b) write_procffssp_to_m5,'pmsdata:Bnnn_procffssp.dat',	X	Note the correction applied to FFSSP time by /auto
'mfddata:Bnnn_mfdX','pmsdata:Bnnn_m5procffssp',/auto	X	20 seconds (!)
1st argument is output file from 5)		
2nd argument is the MFD		
3rd argument is the new FFSSP data file in M5 format		
c) exit		
6) MODIFY		
a) Modifying datasets: pmsdata:Bnnn_m5procffssp	X	
b) Datset: mfddata:Bnnn_mfdX	X	
c) New dataset: Enter updated MFD name	X	
d) Parameter description file: leave blank to use default		
7) CHECKS:		
i) FFSSP and JW/Nevzorov LWC – are they correctly synchronized in time?	No cloud	
ii) If not, may be necessary to repeat 5b) using addt=x keyword. This adds x sec to FFSSP time.		
iii) Alternative at 5b) is to use ,auto=602 or auto=605 to align FFSSP with Nevzorov LWC or TWC.		

CLOUD PHYSICS PROCESSING LOG

Flight number: B169
Date:

C) 2D PROCESSING		
Processing Stage	Completed	Comments
1) Transfer Bnnn.dat file from CD/DVD to PC	X	
2) Zip up file on PC (Bnnn.zip)	X	
3) FTP the zipped file (binary) from the PC to the directory SEADAS_DATA:[SEADAS_DATA] on FLOODS	X X	
4) Log on to FLOODS	Condor	
5) unzip SEADAS_DATA:[SEADAS_DATA]Bnnn.zip	X	
6) In PVWAVE i) !PATH=!PATH+',MRFB:[PMS.PROC]' ii) CONVERT_SEADAS_FILE a) Input file: SEADAS_DATA:[SEADAS_DATA]Bnnn.dat b) Output file: SEADAS_DATA:[SEADAS_DATA] Bnnn_seadas.dat iii) exit	 X X X X	Note the number of bad block reads and/or final numbers of blocks read & written Zero bad blocks
7) run MRFB:[PMS.SEADAS]READM200_FILE a) Default directory: PMSDATA: b) Flight number: Bnnn c) Disk file name: SEADAS_DATA:[SEADAS_DATA] Bnnn_seadas.dat d) Comment string: e) Start time: 0 if unknown f) End time: 240000 if unknown g) Read 2DC: Y h) Read 2DP: Y i) Secondary data Y j) FSP-SYNC: Y k) cmd.str: Y l) Auto time correction: N m) Full length secondary: N	X X X X X X X X X X X X X X	Don't worry about lots of FORTRAN run-time errors as long as the program continues. These are format errors when writing to ascii files.
8) 2D image display and printing Quick look at image blocks if required In PVWAVE i) !PATH=!PATH+',MRFB:[PMS.PROC]' i) WAVE> IMAGEDISPLAY a) 2D directory name: PMSDATA: b) Flight number: Bnnn c) IWC plot: N d) Select probe: (1) 2DC (2) 2DP e) Start time: 0 if unknown f) End time: 240000 if unknown g) Time interval (sec): 0 for every image block nominal 5 sec		This section is optional Features to look for: 1) Noise on 2D-P – does it affect non-edge diodes (with potential to create spurious particle counts)? 2) Can you identify a dominant particle habit for the whole flight (eg. drops or crystals) 3)

Preparation of imagery for Core data product iii) WAVE> auto_image a) 2D directory name: PMSDATA: b) Flight number: Bnnn c) Enter date: YYYYMMDD d) Enter start time 0 if unknown e) Enter end time 240000 if unknown f) Enter time interval (sec) between successive imaged blocks 10 iv) exit PVWAVE Creates files	PMSDATA:	FAAM_YYYYMMDD_R0_Bnnn_2Dx-IMAGES.PS
ftp *.PS files from PMSDATA: to PC		
Load each into Ghostview or other pdf-converter		
Output as pdf file (70 dpi resolution) and append name prefix of CORE-CLOUD-PHY_ to converted files		
9) run MRFB:[PMS.SPEC2D.AUTO]PROCESS2D_AUTO	X	If program crashes at a certain
a) Flight number: Bnnn	X	Time, for any reason, re-run
b) Directory: PMSDATA:	X	With that time as the new end.
c) File generation: Hit enter	X	
d) Time correction: Time offset of the 2D data	X	
e) TAS: Y	X	
f) MFD directory: MFDDATA:Bnnn_MFDX	X	
g) Probe number: (1) 2DC (2) 2DP (0) Both	X	
0 unless either probe known to be faulty	X	
h) Start time: Take-off or 0 if unknown	X	Look for realistic times in Flight Summary file or Cloud Phys operator log.
i) End time: Landing or 240000 if unknown	X	
j) Nominal averaging: 0.2 seconds for conversion to M5	X	
k) Particle type: 8 if known to be in ice cloud	X	Note the particle type
11 if known to be in water cloud	X	
8 if known to be in mixed-phase		
8 if unknown	X	
l) Coefficient choice: 2	X	
m) Output root filename: PMSDATA:Bnnn_PROC2D	x	NO DATA BLOCKS !!
10) In PVWAVE i) enter: !PATH=!PATH+',MRFB:[PMS.PROC]' Note that the comma before "mrfb" is important! ii) WRITE_PROC2D_TO_M5, 'PMSDATA:BNNN_PROC2D.DAT', 'PMSDATA:BNNN_M5PROC2D' iii) exit	n/a	Note: This will run quicker if you specify correct start / end times at 9h) and 9j). Not done: no data blocks
11) MODIFY a) Modifying datasets: pmsdata:Bnnn_m5proc2D b) Datset: mfddata:Bnnn_mfdX c) New dataset: Enter modified MFD name d) Parameter description file: leave blank to use default	n/a	Not done: no data blocks
12) CHECKS:	n/a	
i) Is 2DC/2DP IWC of comparable magnitude and well-correlated with Nevzorov TWC?		

CLOUD PHYSICS PROCESSING LOG

Flight number: B169
Date:

D) PCASP PROCESSING		
Processing Stage	Completed	Comments
1) Complete stage 7) in 2D processing	X	
Ensures Bnnn_FSP.DAT containing raw PCASP data is written to directory PMSDATA:	X X	
2) run MRFB:[PMS.PCASP]PROCPCASP_NEW	X	Note the min size channel
a) Flight number: Bnnn	X	Note the volume flow rate
b) File name: PMSDATA:Bnnn_FSP.DAT	X	
c) Root output name: PMSDATA:Bnnn_PROCPCASP	X	
Produces PMSDATA:Bnnn_PROCPCASP.DAT (binary)	X	
PMSDATA:Bnnn_PROCPCASP.OUT (ascii)	X	
d) Minimum size channel: Default = 1	1	
If smallest size channel are known to be noisy the value of the highest noise free channel to be entered here	1.6 ml/sec	
e) Calibration volume flow rate: Use the most recent value. Calibration files to be stored in **????** Entering zero gives default value = 1.0 cm3/sec		
f) Time correction: Same value as used in 2D processing stage 9 d)	0	
g) Start time: Take-off or 0 if unknown		Look for realistic times in Flight Summary file or Cloud Phys operator log.
h) End time: Landing or 240000 if unknown		
3) In PVWAVE		Note: This will run quicker if you specify correct start / end times at 2g) and 2h).
i) enter:		
!PATH=!PATH+',MRFB:[PMS.PROC]'	X	
Note that the comma before "mrfb" is important!	X	
ii) write_procpcasp_to_m5,'pmsdata:Bnnn_procpcasp.dat' ,'pmsdata:Bnnn_m5procpcasp'	X	
iii) exit	X	
4) MODIFY	X	
a) Modifying datasets: pmsdata:Bnnn_m5procpcasp	X	
b) Datset: mfddata:Bnnn_mfdX	X	
c) New dataset: Enter modified MFD name	X	
d) Parameter description file: leave blank to use default	X	

CLOUD PHYSICS PROCESSING LOG

Flight number: B169
Date:

E) NetCDF file preparation and ftp to BADC		
Processing Stage	Completed	Comments
1) Run TAREXEC:MFD_BADC		
For inputs below, just press ENTER to use defaults		Defaults in [square brackets]
a) MFD to convert: MFDDATA:Bnnn_MFDX b) version number for BADC: r[0] c) Names file: TARDIS_ROOT:[CALTEXT.NETCDF]CP_NAMES.TXT d) Directory: [DATA_ROOT:[NETCDF]] e) File prefix: [core-cloud-phy_faam] f) File suffix: [ ] g) File for output: [core-cloud-phy_faam_yyyymmdd_rm_Bnnn.nc]		As from 4c) above default NOT the default default default default Default name is generated
2) Ftp transfer to BADC - stage 1) creates two files: - core-cloud-phy_faam_yyyymmdd_rm_Bnnn.nc - core-cloud-phy_faam_yyyymmdd_rm_Bnnn.txt The *.txt file should be renamed to core-cloud-phy_faam_yyyymmdd_rm_Bnnn_descrip.txt but this cannot be done on VMS as the filename is too long You should do it if the file is first transferred to a PC, or after it has been uploaded to the appropriate “incoming” directory at BADC a) ftp ftp.badc.rl.ac.uk b) login with username and password c) cd /incoming/faam/campaign-processed-core d) copy *.txt file as ascii e) copy *.nc and *2D-IMAGES.pdf files as binary		

F) BACKUP PROCEDURES		
Processing Stage	Completed	Comments
1) Backup the intermediate files created in PMSDATA: a) zip “-V” PMSDATA:Bnnn*.* outdir:Bnnn_PMSDATA.zip Note that the uppercase “-V” option is important to preserve the VMS file characteristics when files are restored from this zip file.		Note destination directory “outdir”

CLOUD PHYSICS PROCESSING LOG

Flight number: B169
Date:

A)	**Raw data transfer to BADC**	
Processing Stage	Completed	Comments
1) Transfer raw data files from DVD to PC Bnnn_FFSSP_hh.txt for each hour of data Bnnn_FFSSP_HVMS.txt Bnnn_FFSSP.raw Bnnn_FFSSP_House_1.hse etc. 2) Zip these file on the PC -output file: core-cloud-phy_faam_yyyymmdd_r0_bnnn_rawffssp.zip		
3) Transfer SEADAS Bnnn.dat file from CD/DVD to PC 4) Zip up file on PC (Bnnn.zip) - rename Bnnn.zip to core-cloud-phy_faam_yyyymmdd_r0_bnnn_rawseadas.zip		
5) ftp to BADC a) ftp ftp.badc.rl.ac.uk b) login with username and password c) cd incoming/faam/campaign_raw d) bin e) put core-cloud-phy_faam_yyyymmdd_r0_bnnn_rawffssp.zip f) put core-cloud-phy_faam_yyyymmdd_r0_bnnn_rawseadas.zip		Binary data transfer

FLIGHT NUMBER: B169	DATE: 9/2/06	OPERATOR: PAPJ.	Page 1 of 2
PROJECT: DODO			

CCN LOG

ALLEVIATOR GMT		HEIGHT	TEMP INLET			STATIC				REMARKS
ON	OFF			1	2	3	4	5		
			24.2	1.75	2.5	3.5	4.25	5.5		
1153			23.3	0.16	0.31	0.49	0.71	1.06	S	
			22.1	1168	1551	1969	2042	2600	D	
			21.47	348	370	455	455	601	B	
			20.59	2464	2468	2468	2468	2468	R	
				989.8	989.9	989.9	989.9	989.9	P	
			24.37	0.16	0.31	0.49	0.70	1.06	S	
			23.71	726	1447	1504	1864	333	D	
1223			22.95	274	272	300	300	561	B	
			22.29	2347	2340	2340	2340	2322	R	
			21.10	989.7	989.7	989.7	989.7	989.7	P	
			25.17	1.75	2.5	3.5	4.25	5.5		
			24.39	0.16	0.30	0.49	0.69	1.08	S	
124330			23.03	940	1159	1396	2536	2458	D	
			22.49	245	253	274	343	343	B	
			21.81	2309	2311	2313	2319	2320	R	
				990.0	990	990	990	990	P	
			25.14	0.16	0.3	0.47	0.70	1.06	S	
			24.44	391	579	806	727	1329	D	
134420			23.63	203	207	207	246	246	B	
			22.82	2411	2411	2411	2411	2411	R	
			21.74	1014	1014	1014	1014	1014	P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	

P.S.A.P. Log

Flight No. **B**169..... Date .07/02/06..... Page ..1... of .

GMT	Filter Trans.	Flow Rate	B_a x 10^{-6}	Ph_det levels		Run	Remarks
Set to DRS time	New filter Tr = 1.000	Set to 3.0 lpm				(30s) ? Ave =30 s	←Preflight
1134	1.00-0.61		34.1	21	47	30s	start recording after take off
1239	1.00-0.63	3	28.3	22	47	30s	new filter
1340	1.00	3	30.9	22	46	30s	new filter
1406	0.944						off

ARIES flight log

Flight: B169 | Location: | page 1 of

Date: 7-2-6 | Operator(s): VANCE | Resolution: 1 | Gain A: 2 B: 2

Notes: DODO aerosol @ Sinel, S. of Dakar

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
0813	Preflight	b169—	C	40	~22	20	-190	23.3		
051409	"	B169a	C	40	~24	20.4	-191	22.6	CH1	- just checking.
082920	"	B169B	C	~34	~30	22	-190	24	CH2	"
083400	"								ARIES dropped out	v. briefly. Back again
0841	"	shutting down pointing away to keep CBB cool. Good Z gains								look like 2 & 3
100041	"	B169C	C	42↑	~24	25	-190	33	CH1×2	just checking G(2,2)
100248	"	B169D	C	48~	26~	25	-190	33	N1	" G(2,2)
		shutting down pointing away to keep CBB cool								
110000	on pan	—	C	*	*	*	-191	38	2nd port 39!	
1105	Engine St.	—	C	36	28.5	28	-190	38	Pointing shut again	
1122	T/O			~60	~30					
1126	P1	—	O	61↑	~35	31	-190	37	Trying to cool CBB	TAT ~25, T1 ~1
1133	P1	—	O	Shutdown Reg. to cool					cbb - cannot cool	below 40° beg
									Spooning air from Z. Top biomass ~8000'	
1140	EP1 (FL180)		O		~25				(TAT @ FL080 ~ 286K = 13°C)	
1148			O						Scan rate ~ 60! "unable to configure"	
115421	R1 FL080	B169f	C	71	31	17	-190	31	CH1	Restarted software — OK
	"	B169G	O	71	31	18	-190	31	Z1×2	
115731	"	B169H								as

ARIES flight log

Flight:	Location:	page 2 of
Date:	Operator(s):	Resolution: / Gain A: B:
Notes:		

DRS time	Flight ptrn	Filename	Shtr	HBB	CBB	Mir.	Det.	Win	Macro(s)	Comments
115929	R1	h	C						Reslanted S/W	— OK
	R1	I	C							
120028	"	I	C	71	31	21	-190	31	CH1 x1	Passed Lemel @ end
120151	"	J	O	71	30	21	-190	31	Z1 x1	Seized up again
~1:55 slow	this failure seemed to be a software-only seizure — scans stayed at 120									Restarted everything.
120740	R1	L	C	71	31	22	-190		CH1	
1209	R1	B169M	C/O	71	32	22	-190	32	Z1x3 missed first ~10 secs.	
									"Error in copy, acq. aborted"	
1215	Run scandisk on G: — nothing major — trying recording to H anyway.									
time OK	everything reslanted									
1224	Can't run macros * — "Flight ID should have 5 characters" — odd error									
	occurs as immediately OPT2A is selected.									
1229	Trying to find source of error msg in op2a.mac. PC hung. reslanting									
	Scandisk says C, G, H OK.									
	ARIES U/S ——→ See log book									
1419	land.									

SWS FLIGHT LOG SHEET

Flight #	B169	Date	07/02/06	Operator(s)	Ian Rule	log page	of

Time	Run id	Alt/FL	Mirr Pos	Int Times		Remarks
				Vis	NIR	
0830						SHIMS VIS ok, NIR too cold @14 deg. SHIMS logged on rack PC
0834						SWS VIS ok, NIR not initialised, logged on laptop
0848						NOTE SWS cam video recorder is u/s
Note for purposes of this flight the SWS is going to be operated from the rack PC, and SHIMS from the laptop (the shutters will be operated from the rack PC)						
0902						SWS checked ok on rack PC
1000						SHIMS not responding from any pc
1026						SWS to be operated from rack pc
						Laptop pc time set to drs
112228	P1					T/o Dakar
112448	P1		90 aft	100	200	SWS recording ok
112642	P1		Zen +6 f	75	200	SWS
113959	P1/P2	FL	Zen +6 f	75	200	SWQS End profile, start next
1146	P2			100	200	SHIMS working, no shutters as yet
Some playing about with shutters with utility prog 1150						
115140	R1	FL80	Zen +6f	75	200	SWS
1152						SHIMS dropped out
1200						SWS nIR dropped oit
1202	R1	FL80	Zen +6f	100	250	SWS back up ok
1205	R1.1	FL80		100	100	SHIMS up, dark forced by util prog, NOT in dark file
1207						SHIMS dark measurement
120750				100		End dark for SHIMS
1210						SWS dropped out, and shims
1215						Sws back
121632						End run
1218				100		SHIMS back
121940						Forced non ‘dark’ zero for shims
122015						Back to measure on shims
122216	R1.2	FL80	Zen +6f	100	250	Sws ok so far
				100	100	Shims vis module ok so far
1224						Shims dropped out
1227				100		Shims running, sws nir dropped out
123150						Shims forced dark measurement
123230						End dark for shims
Big probs with both sws shims and shutters 1236						
1239		FL80	Zen +6f	100	250	Sws back
1241				100	100	SHIMS vis back
124245						Shims dark forced
124320	R1.3					Shims back to measure
1247						Shims dropped out, and sws nir, both switched off to try again
1252				100	250	Sws back

SWS FLIGHT LOG SHEET

Flight #	B169	Date	07/02/06	Operator(s)	Ian Rule	log page	of

Time	Run id	Alt/FL	Mirr Pos	Int Times		Remarks
				Vis	NIR	
1254				100	250	Shims vis back
125702	R1.3					End run, forced zero for shims at 1259, lasting 30 s
1301						Shims dropped out
1302	P3	FL80				
130710	P3/P4	FL40		100	250	Sws ok
				100	100	Shims ok
				50	250	Sws integ times changed
130930				100		Forced zero for shims
131255				50		Shims integ time changed
131310						Forced zero for shims
131532	P4	FL120				End profile
131602	P5	FL120				Start profile
				50	250	sws
				50		Shims, temp = 10
122511	P5/P6	FL40				Sws/shims seem ok
1330			Zen +6f	50	250	swszero
1331				50		Shims zero
133150	P6	FL120				End profile
133255	P7					Start profile
134420	P7/R2	2000’				End profile start run
			Zen =6f	50	250	Sws ok
				50		Shims vis ok
134800				50		Shims zero
135000	R2.1	2000’	Zen+6f	50	250	Sws zero
1402						Sws nir dropped out
1403				50	250	Sws nir back
1406						Stop shims
1409						Stop sws
141835						Land dakar

Filter Sampling Log

Flight No: B169 **Date:** 07 FEB 2006 **Operator:** PFO

Type of filters mounted in	**Top inlet**	47 mm Whatman QMA (top)	**Bottom inlet**	90 mm 0.4 µm Nuclepore followed by a 90 mm paper (top)
Except for				

Run No	Disk #1 TOP	Disk #2 MIDDLE	Disk #3 BOTTOM	Inlet Top/ Bottom	Time On	Time Off	Flight Run	Accum Vol [l]	Comments
Filters run1	B169Q4	----	----	Top	11:52:09	12:16:32	R1.1	2505	FL080, bottom of aged biomass layer
Filters run1	B169N4	----	----	Bottom	11:52:09	12:16:32	R1.1	1732	FL080, bottom of aged biomass layer
Filters run2	B169Q3	----	----	Top	12:22:21	12:37:36	R1.2	1501	FL080, bottom of aged biomass layer
Filters run2	B169N3	----	----	Bottom	12:22:21	12:37:36	R1.2	996	FL080, bottom of aged biomass layer
Filters run3	B169Q5	----	----	Top	12:43:11	12:57:02	R1.3	1316	FL080, bottom of aged biomass layer
Filters run3	B169N5	----	----	Bottom	12:43:11	12:57:02	R1.3	936	FL080, bottom of aged biomass layer
Filters run4	B169Q7	----	----	Top	13:44:29	14:03:19	R1.2/R2.2	2249	2000 feet, aged biomass layer or dust, run interrupted – ship in path
Filters run4	B169N13	----	----	Bottom	13:44:29	14:03:19	R1.2/R2.2	1711	2000 feet, aged biomass layer or dust, run interrupted – ship in path
Filters run5	B169Q6	----	----		----	----	----	----	blank
Filters run5	B169N6	----	----		----	----	----	----	blank

Hopper
622
623
624

Wet Nephelometer Log

Flight No **B**.169..... Date ..07/02/06..... Operator's name: BOWLES/OSBORNE Page ....1.. of ..1....

GMT	Run	Height	Sample flow	Dry neph RH (RH2)	Wet neph RH (RH6)	Temp ramp	T_{water}	Remarks
								PRE-FLIGHT CHECKS.
(1)	Dry Neph zero				OK.			
(2)	Wet Neph zero				Better	→	~0.9	Still problem with HEPA?
115330	R1	R060	12.6	11.2	35.8	↗	30°C	SET TO
115605	"	"	12.7	12.9	~~64.5~~	↗	35°C	" "
120000	"	"	12.6	11.9	~~28.4~~ 72.1	↗	40°C	" "
120325	R1.1?	"	12.6	11.2	~~87.7~~	↗	45°C	" "
121014		"	12.7	10.6	73.2	↘	15°C	" "
122350	R1.2	"	12.7	10.9	31.0	↗	25°	" "
122715	?	"	12.6	9.6	39.7	↗	35°	" "
123015		"	12.7	9.6	54.4	↗	45°	" "
123530		"	12.6	13.8	58.9	↘	18°C	" "
124615		"	12.5	16.1	32.4	↑	25	" "
124740		"	12.6	12.2	39.5	↑	35	" "
~1250??						↑	45	" "
13:57:00		FL 0200	13.5	11.2	66%	↓	20°C	" " — CHILLER — LOW COOLANT, TRIED ON/OFF — NO DIFF.

Bags are numbers 1-140 and tubes are the other samples							
Date	**07/02/06**	**Tubes & Bags**		**Flight#**	**B169**		**B169**
T.O.	**11:22:28**	**Land**	**14:18:34**	02:56:06			**Jim McQuaid (ULeeds)**
Tube/Bag #	**START**	**END**	**Alt. (ft)**	**Sample Time**	**Flow**	**Vol**	**Comments**
067608	11:58:05	12:06:10	8000	00:08:05	400	3233	
062166	12:24:40	12:35:50	8000	00:11:10	200	2233	
DO17761	12:45:00	12:56:00	8000	00:11:00	200	2200	
067670	12:59:30	13:12:00		00:12:30		n/a	BLANK
067546	13:46:00	13:57:00	8000	00:11:00	250	2750	

Flight Manager's Instrument Status Log

Flight No. **B** 169 Date: 7rd February 2006

Instrument	Operated	Instrument	Operated
Navigation		**Cloud Physics**	
INU	**Y**	**Probes**	
XR5M GPS	**Y**	FFSSP	**Y**
Cruciform GPS	**N**	PCASP	**Y**
Satcom C	**Y**	2D-P	**Y**
Satcom H	**Y**	2D-C	Y
Thermometers		Cloudscope	**N**
De-Iced Temp	**Y**	SID 1	**Y**
Non De-Iced	**Y**	SID 2	**Y**
Heimann	**Y**	HVPS	**N**
Hygrometers		CIP25	**N**
G. Eastern	**Y**	CIP100	**Y**
J. Williams	**N**		
Nevzorov	**Y**		
TWC	**Y**		
FWVS	**N**	**Racks:**	
Radiometers		INC	**N**
Upper Clear	**Y**	CCN / CPC	**Y**
" Red	**Y**	CVI	**Y**
" Silicon	**Y**		
" SHIMS	**Y**	**Aerosol**	
Lower Clear	Y	PSAP	**Y**
" Red	**Y**	Nephelometer	**Y**
" Silicon	**Y**	Filters	**Y**
		AMS	**Y**
Large Radiometers			
TAFTS	**N**		
MARSS	**N**		
DEIMOS	**N**	**Others:**	
ARIES	**Y**	NIR TDLAS	N
SWS	Y	2BT O3	N
Chemistry		VACC	Y
Ozone	Y	PEROXIDE	N
SO2	Y	Formaldehyde	N
NOX	Y	ADA	N
CO	Y	CPI	N
ORAC	N	NOxy	N
PAN	Y	PTRMS	N
PERCA	N	Bag Sampling	N
WAS	N	Tube Sampling	N

Faults / Incidents Log

Flight No. B169
Date: 07 February 2006

Instruments

1. Upper and Lower Pyrgeometers – signal noisy
2. JW not operated
3. FFC & UFC Windows need to be cleaned
4. Preflight - Nox Sample line found not correctly tightened – possibility of sampling cabin air during B168
5. Intermittent ARIES fault
6. Intermittent SHIMS data
7.

Aircraft

Nil

Satcom Calls

MISSING LOG SHEETS:

The following log sheets are not available for flight B169:

Log	Reason
Core Chemistry	pre flight only, unmanned operation on auto calibrate so no In Flight log
CVI	No log is ever taken for CVI
AMS	Log only of interest to instrument operator so no copy left with FAAM
VACC	No log is taken/provided for VACC

VIDEO RECORDINGS:

2 x Forward Facing Cameras
2 x Downward Facing Cameras

Digital8 video recordings from this flight reside with :

Dr. Eleanor J. Highwood

Senior Lecturer in Climate Physics
Department of Meteorology
University of Reading
Reading
RG6 6BB

Tel: +44 (0) 118 378 6688
Fax: +44 (0) 118 378 8905

E-mail: e.j.highwood@reading.ac.uk